SPECIFICATION

Please change title starting at page 1, line 1 with the following new entry:

BRAKING BUFFER AND TURNING ENHANCEMENT
ENHANCEMENT DEVICE FOR MOTORCAR

Please replace the paragraph beginning at page 1, line 6 with the following new entry:

The present invention relates to a mechanical braking buffer and a turning ~~balance~~enhancement device. In particular, the present invention relates to implementing momentum transfer, which transfers the temporary momentum to a weighty drum. These mechanical devices increase the comfort and safety of a car.

Please replacement the four paragraphs beginning on page 2, line 6 with the following new entries:

It is therefore an object of the invention to provide an improved braking ~~buffer~~enhancement device for a motorcar. The device will transfer the temporary momentum to a weighty drum when braking, this will decrease the pushed feeling of the driver and the passenger, increasing comfort when braking.

It is another object of the invention to provide an improved braking ~~buffer~~enhancement device for a motorcar. This is accomplished by implementing a simple mechanical device to decrease braking distance, and increase safety when braking.

It is yet another object of the invention to provide an improved turning ~~balance~~enhancement device for a motorcar. The device will transfer the momentum of the outward temporary centrifugal force to a weighty drum when the car is turning, thus increasing comfort.

It is yet a further object of the invention to provide an improved turning ~~balance~~enhancement device for a motorcar. The device will decrease the radius of turning by decreasing the outward centrifugal force of the front wheel, and decrease the wear on the tires, thus increasing the safety of the driver and the passengers.

Please replace the paragraph beginning on page 3, line 13 with the following new entry:

Another preferred embodiment of the present invention teaches a turning ~~balance~~enhancement device for a motorcar, by transferring the momentum of the temporary centrifugal force to a weighty drum when the car is turning, to decrease the centrifugal momentum of the front wheel, thus increasing safety, comprising: A supporting frame, fixed transversely under the body of a car near the trunk, to support the left and right end plate, guiding axis, recover spring and weighty drum; A guiding axis, guiding the position of the weighty drum and the spring to slide to the left or to the right; Two left and right end plates, fixing on the two end of the supporting frame, for supporting the guiding axis; A weighty drum, sliding along the guiding axis for absorbing momentum; A recover spring, for recovering the original position of the weighty drum; A fixing mechanism, for fixing the supporting frame on the body of a car.

Please replace the paragraph beginning on page 4, line 11 with the following new entry:

FIG. 3 is a schematic representation of the structure of a turning ~~balance~~enhancement device in according to one embodiment of the present invention.

Please replace the paragraph beginning on page 4, line 13 with the following new entry:

FIG.5 illustrates the example set up of two braking buffer devices and one turning ~~balance~~enhancement device under the body of a car.

Please replace the paragraph beginning on page 5, line 15 with the following new entry:

The change of momentum makes the driver and the passengers feel a pushing, part of the momentum change to the momentum of the weighty drum, thus decreasing the push felt by the driver and the passengers. Until the braking is completed, the momentum of the weighty drum is struck against the car and changed to be part of the momentum of the car (part of the momentum changes to potential energy) through the spring and the body of the car. However, by this time, the braking is already completed and the strike is not essential to the driver and the passengers. Now the weighty drum stops on the front-end position, as shown in FIG.2. FIG. 2 is a schematic representation of the position of the weighty drum in the instance after braking. One can see in FIG.2 that the recover spring 110 is compressed and storing potential energy, but the buffer spring 112 is still in its original position because it does not connect with the weighty drum. Once the weighty drum 114 approaches the most front end of the rear end plate 104, the weighty drum 114 is pushed back to its original position by the recover spring 110, as shown in FIG.l. When the weighty drum 114 approaches the far front end of the rear end plate 104, the motorcar may still be moving forward, and braking is still in progress. The action of pushing back the weighty drum 114 to its original position by the recover spring 110 causes the weighty drum 114 to shoot off backward and touch the rear end plate 104. As a result, the motorcar receives a backward force that helps with braking such that the speed of the car decreases and less braking is required. The shape of the weighty drum is the same as the supporting frame, it may be round shaped or of other shapes to match the shape of the supporting frame, i.e. to match the shape of the installing space. It is preferable to have more mass in the weighty drum, dependent on the size of the car. In order to decrease the volume of the weighty drum, it is preferable to use lead. Additionally, stainless steel or [[ion]]iron could be used to decrease pollution.

Please replace the paragraph beginning on page 7, line 10 with the following new entry:

FIG. 3 is a schematic representation of the structure of a turning~~balance~~ enhancement device in according to one embodiment of the present invention. The turning balance device 200 is different from the braking buffer device 100 in view of the weighty drum 214. The weighted drum 214 is put in the central position_of the turning device 200, and there are recover springs 210 and 212 on either side, supporting frame 202 is fixed transversely on the rear part of the body under the trunk or in the rear bumper. A larger distance from the front axis of the wheel to the weighty drum 214 produces better results. Left end plate

204' and right end plate 204 are fixed on the two sides of the supporting frame 202 to support the guiding axis 208, The weighty drum 214, recover spring 210 and 212. The guiding axis 208 goes through the sliding hole of the weighty drum 214 such that the weighty drum 214 can slide along it to the left side or the right side, for example, when turning to the right, refer to FIG.4. FIG. 4 is a schematic representation of the weighty drum slipping to the left due to the centrifugal force when the car turning to the right. Assume that the mass of the weighty drum is m, when accelerates to a speed of v_3, the momentum will be:

Please replace the paragraph starting at page 8, line 1 with the following new entry:

Since the left front tire has frictional force with the ground, the outward speed is nearly zero. But if the centrifugal force is too large, the frictional force is smaller than the centrifugal force, then the front tire will slip outward and forward. This will increase the turning radius, the momentum of slipping is $ft = Mv_4$, where f is the centrifugal force, t is the time of slipping, M is the mass of the car and v_4 is the average speed of slipping, then the momentum of slip is Mv_4. But if the weighty drum is sliding to the left side freely, due to no frictional force, its velocity v_3 is larger than the slipping velocity v_4 of the car, thus the momentum is transferred temporarily to the weighty drum, and the momentum $ft = mv_4$ is absorbed by the body when the weighty drum reaches the far left end, and an outward force $f = mv_4 / t$ is produced. This force produces a torque to assist the car to rotate toward the turning direction, and the front tire would not slip outward and forward, thus decreasing the radius of turning, and decreasing the wear of the tires. Also, the balance and safety of the driver and the car are improved. It also decreases tilting, so increases the

~~comfortable~~comfort of the passengers. When the turning is completed, the weighty drum 214 is blocked by the left end plate and the right end plate and momentum is released and transformed to a pushing force, but in this time, turning has been completed. This pushing is not important to the driver and the passengers. Now the weighty drum stops on the left end position, as shown in FIG.4. The left recovered spring 210 is compressed and potential energy is stored, but the right recovered spring 212 is still in its original position, since the recover springs do not connect with the weighty drum. Once turning is completed, the recover spring 210 will push the weighty drum to its original position, as shown in FIG.3. For a left turn, the weighty drum 214 will slide to the right. The operation is the reversal of FIG.4.

Please replace the paragraph starting at page 9, line 1 with the following new entry:

FIG.5 illustrates the example set up of the two braking buffer devices and one turning ~~balance~~enhancement device under the body of a car. One of the braking buffer device 504 is installed between the right front tire 502 and the right rear tire 503 longitudinally. Another braking buffers device 504' is installed between the left front tire 502' and the left rear tire 503' longitudinally. The turning enhancement balance device 505 is installed behind and under the trunk transversely, as shown in FIG.5.